534-5.

JUL 8 1915

Fireproof Floors of Pressed Steel Construction

Light Weight
Less Labor
Shorter Time
Great Economy



TRUSSED CONCRETE STEEL CO.

YOUNGSTOWN, OHIO

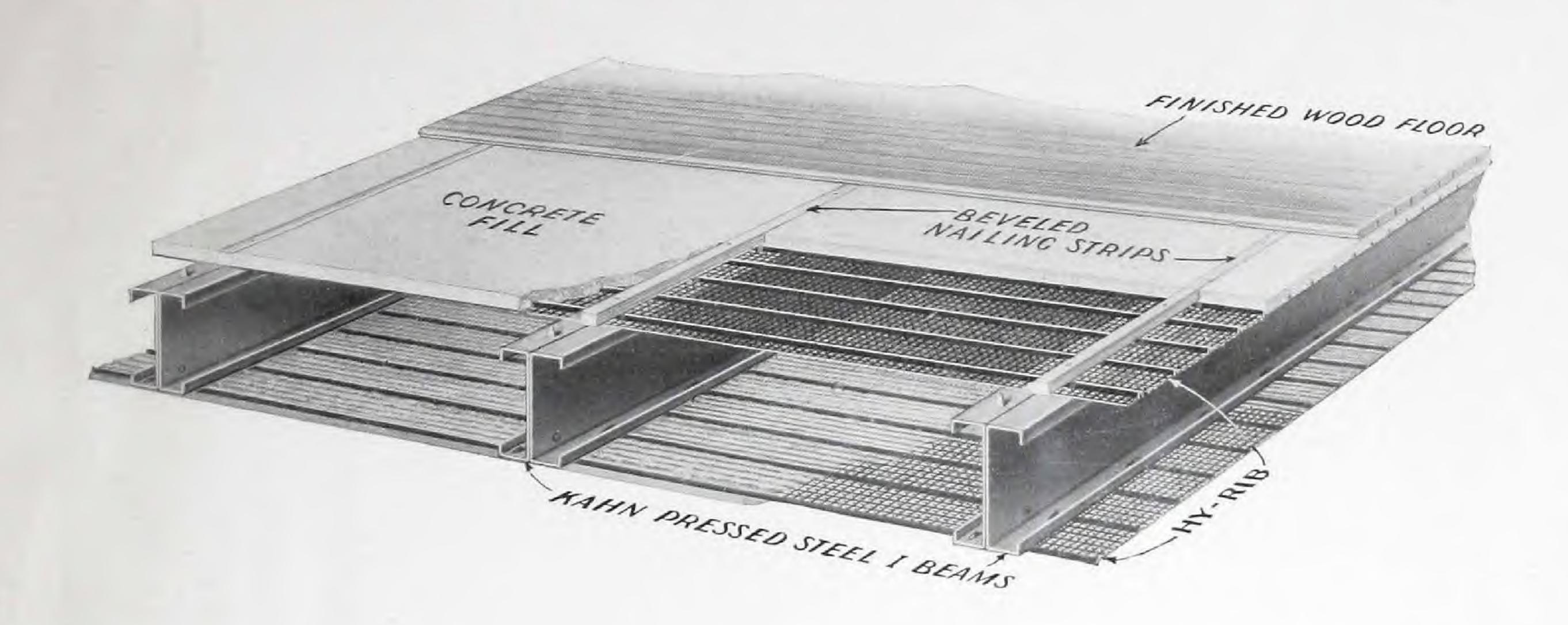
REPRESENTATIVES IN PRINCIPAL CITIES



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A Fireproof Floor — Light in Weight and Low in Cost Kahn Pressed Steel Beams with Hy-Rib and Concrete

For floors of all buildings,—stores, apartment houses, schools, etc., here is a fire resisting construction which is simpler to erect than wood and costs very little more. It is no longer necessary to use inflammable wood joists and wood lath in even the smallest of buildings. The use of Kahn Pressed Steel Beams with Hy-Rib and concrete provides the permanence and fireproofness of reinforced concrete and steel, without requiring special equipment for installation.

No forms nor centering are required and only a comparatively small amount of materials need to be handled saving time and labor in erection. The light weight of this construction saves greatly not only in the floor itself but in the supporting beams, columns and foundations.

The Kahn Pressed Steel Beams are made in a large variety of sizes and shapes so as to meet the exact requirements of span and loading. They are furnished cut to exact length and properly manufactured so that no further work is required on them at the building site. These Pressed Steel Beams are set in place and 3/8" Hy-Rib Lath placed on the top and bottom sides. For wood finished floors, beveled wooden strips are fastened to the beams by nails driven between the channel sections. The concrete fill is then applied to the Hy-Rib and the finished wood floor nailed to the strips. The Hy-Rib on the ceiling is readily attached to the under side of the beams by merely bending over the prongs provided in the beams. Any other type of finish can of course be applied to the floor.

The Kahn Pressed Steel Beams may be supported directly by walls, or by beams of structural steel or reinforced concrete. The use of reinforced concrete beams provides very economical construction as explained in detail on page 6 of this folder.

Eliminate the wood joists in your building by the use of these Pressed Steel Beams. The economy and advantage due to fireproofness and permanence are worth many times the slight additional first cost. Kahn Pressed Steel construction is simpler and easier to erect than wood and takes less time. Write for our detailed suggestions for your particular work.

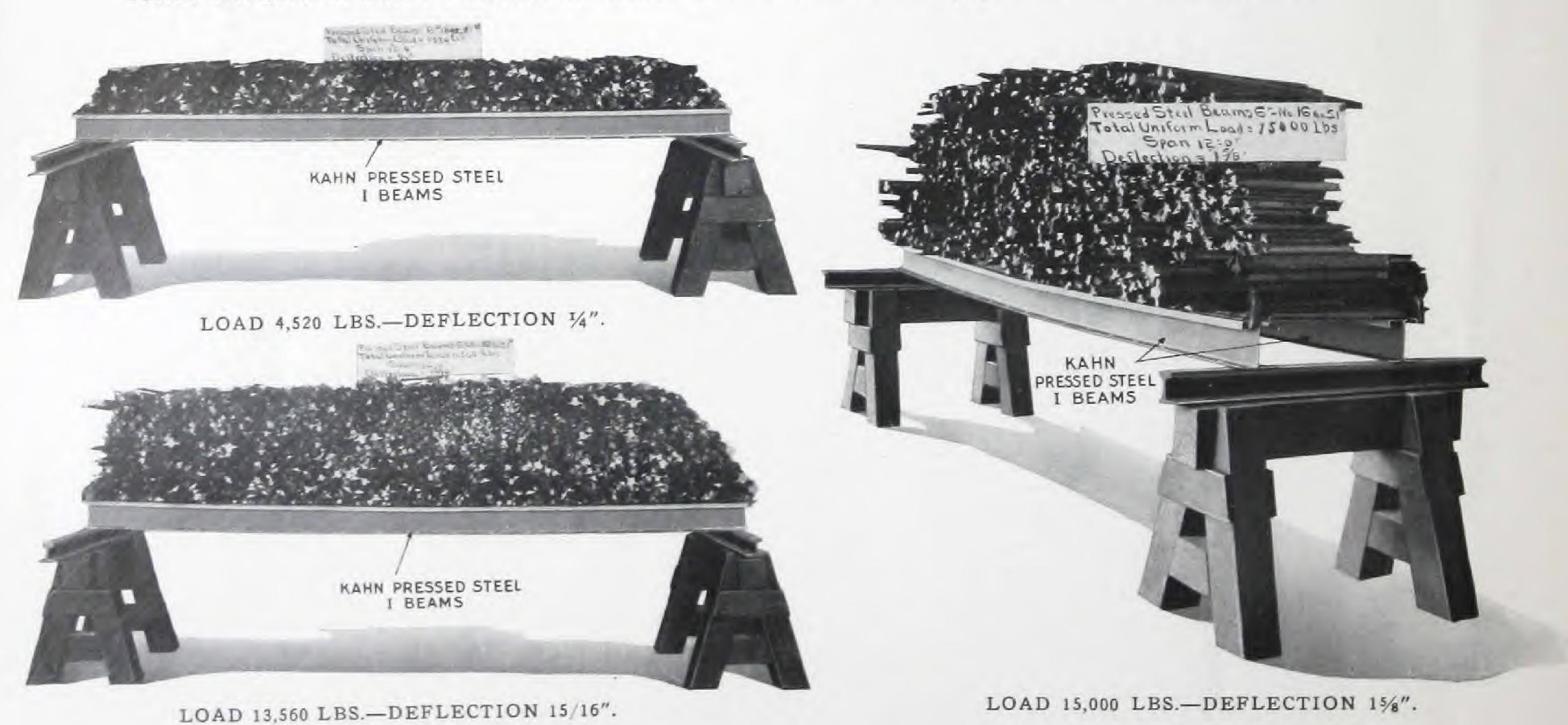
Remarkable Test of Kahn Pressed Steel I-Beams

This test was made on two Kahn Pressed Steel I-Beams, sizes 6-inch, 16 gauge, 4.9 pounds per foot and spaced 24 -inch centers. Extreme care was used in reading and measuring deflections, etc., so as to secure maximum accuracy. Bar steel was used in loading, uniformly distributed and carefully weighed. The I-Beams rested on steel rails which were spaced 12' 0" center to center.

Based on an allowable stress of 14,500 pounds per square inch, these two beams should carry a total of 4,230 pounds on 12' 0" spans. The maximum allowable deflection for a ceiling is 1/360 of the span, thus allowing a maximum deflection of 3/8" for these beams under a load of 4,230 pounds.

The actual results of the test show the exceptional strength and stiffness of the beams. Under a load of 4,520 pounds, the deflection was only ¼ of an inch; under a load of 13,560 pounds, the deflection was 15/16 of an inch; under 15,000 pounds, 3.56 times the calculated safe load, the deflection was 15/8 of an inch. The beams finally failed at a load of 16,000 pounds, 3.78 times the calculated safe load.

It is interesting to compare the stresses in these Pressed Steel I-Beams with actual tests of rolled Structural Steel I-Beams in which the factors of safety proved considerably less.



Important Advantages of Kahn Pressed Steel Beams

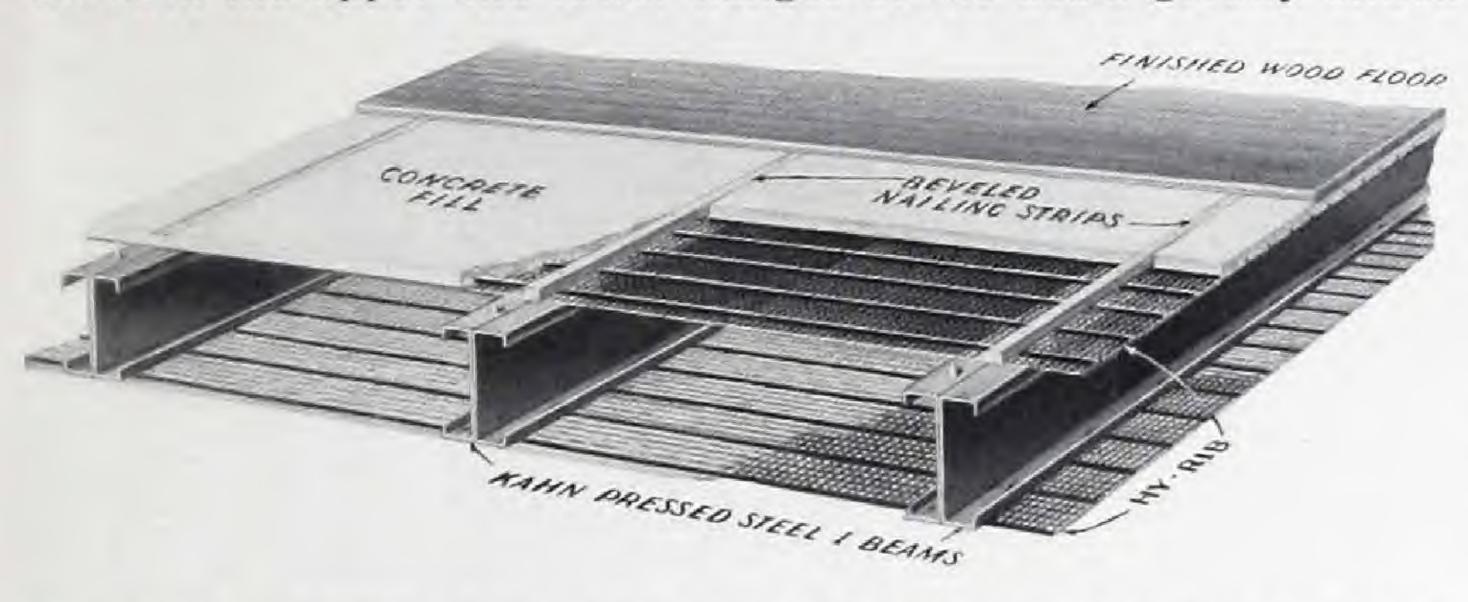
- 1. All beam sections are symmetrical both horizontally and vertically. There is no danger of the contractor placing beams with the wrong side up such as might occur with unsymmetrical sections.
- 2. Wide choice in sections and heights of members, in most instances providing two widths of flange for the one depth of the beam, in addition to various gauges of metal.
- 3. Standard rivets used to unite the channels forming the I-Beams and riveting done under powerful press.
- 4. Use of 3/8" Hy-Rib Lath for floor centering and ceiling does away with need for bridging. The ribs act as a strut and thoroughly brace beams together.
- 5. The stiffness of Hy-Rib prevents sagging thereby saving material in concreting and labor and material in plastering.
- 6. The extra turned flanges on both faces of beams and studs add greatly to their stiffness and strength. The calculation of all beams is based on net sections deducting the holes punched out for the prongs.

Fire-Resisting Floors of Kahn Pressed Steel Construction

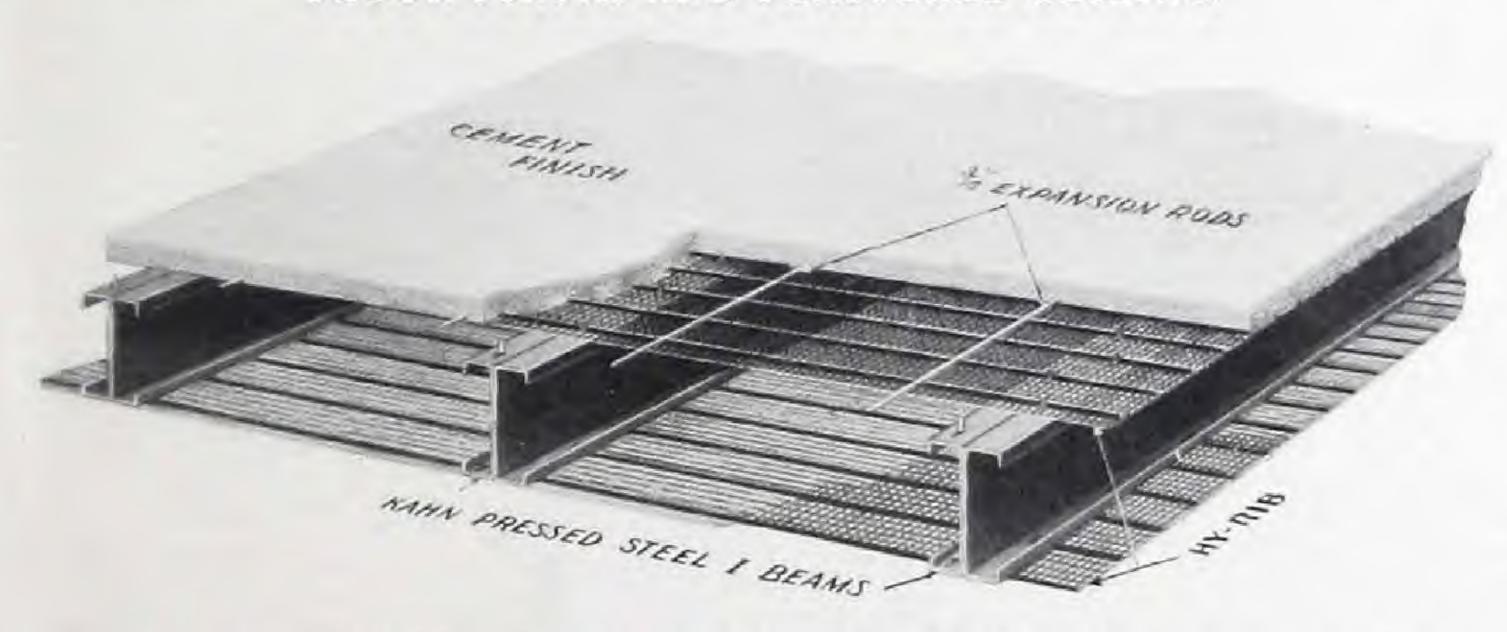
The floors consist of Pressed Steel I-Beams of proper size and section to carry the required load. \(\frac{3}{8}''\)
Hy-Rib Lath is laid on top of these I-Beams, with the ribs extending across them and is secured to the beams by the prongs in the top flange or by the nailing of the sleepers to the joist. This Hy-Rib not only serves as forms and reinforcing for the concrete but so greatly stiffens the construction as to eliminate all necessity for bridging, the ribs acting as a strut between the beams. Hy-Rib for ceilings is attached to the I-Beams by means of the prongs punched from the lower flange.

3/8" Hy-Rib Lath of proper gauge is used with the pressed steel beams for floors and ceiling.

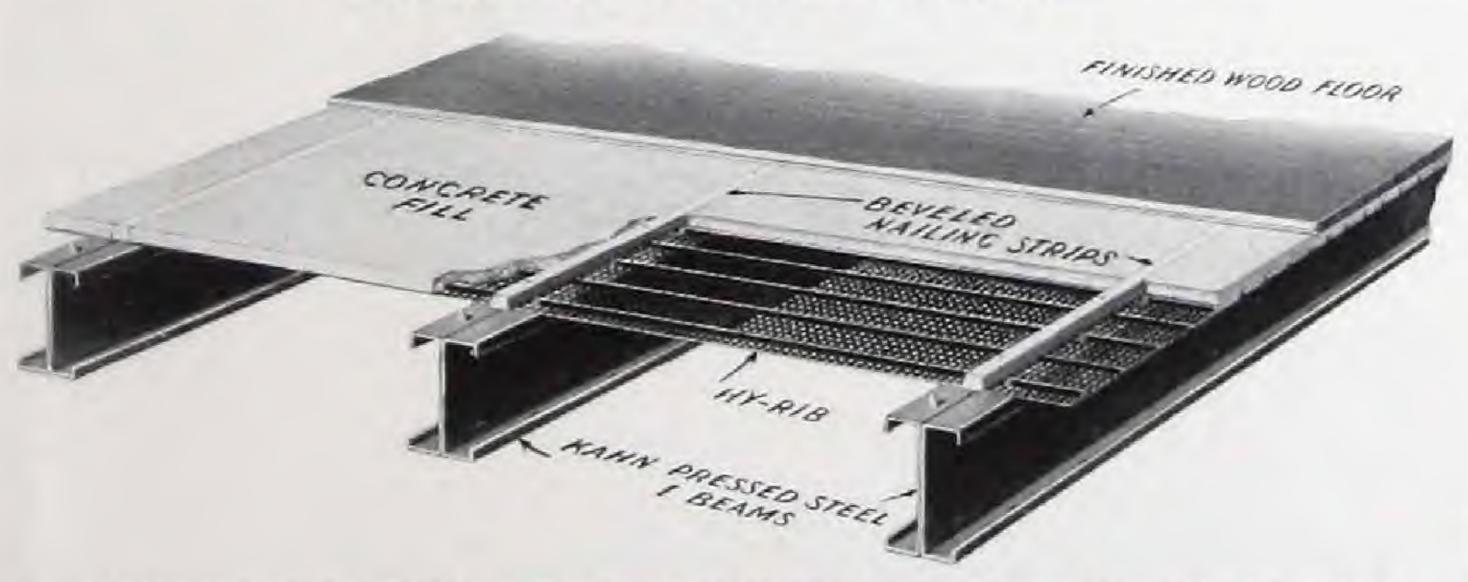
The Kahn Pressed Steel I-Beams are manufactured in such a large variety of shapes and sizes as to meet all requirements of span and loading. Note particularly that the I-Beam sections are absolutely symmetrical both vertically and horizontally. There is no possibility of a contractor placing them with wrong sections on the lower side such as may happen where the sections are unsymmetrical. The turned flanges on both the upper and lower flanges of the beam greatly stiffen and strengthen the I-Beam.



STANDARD PRESSED STEEL FLOOR CONSTRUCTION WITH WOOD FLOOR FINISH AND PLASTERED CEILING.



STANDARD PRESSED STEEL FLOOR CONSTRUCTION WITH CEMENT FINISH AND PLASTERED CEILING.



STANDARD PRESSED STEEL FLOOR CONSTRUCTION WITH WOOD FLOOR FINISH AND WITHOUT CEILING.

The tables given for carrying capacities are based on the actual **net sections** of the steel after having deducted the area for punching out of the prongs. Standard rivets are used for riveting together the channel sections that form the I-Beams.

Where a wood floor is desired, beveled nailing strips are used over the top of the I-Beams and are fastened to them by nails driven between the channel sections. Between the nailing strips a concrete fill is applied. The nailing strips are ordinarily 1½" deep. The finished wood floor is attached directly to these nailing strips.

For a floor with cement finish, expansion rods are placed over the Hy-Rib and concrete applied as shown in illustration. Owing to its stiffness, there is no appreciable sagging of the Hy-Rib thus saving greatly in amount of concrete required. Where it is not necessary to have a plastered ceiling, as in basements, the Hy-Rib may be omitted from the lower flange as shown in illustration.

WEIGHT OF KAHN PRESSED STEEL FLOORS.

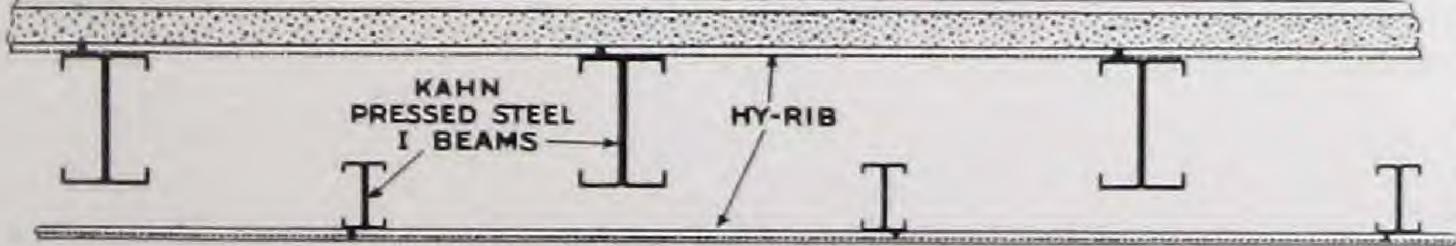
Wood Floor With Plastered Ceiling

Weight per squa	are foot.
Wood flooring	
Kahn Pressed Steel joist (average weight)	pounds
Total	pounds

For cement finished floor deduct for weight of wood finish, making proper allowance if the floor varies from 1½ inches in thickness. For floors without ceiling deduct weight of ceiling from above figures.

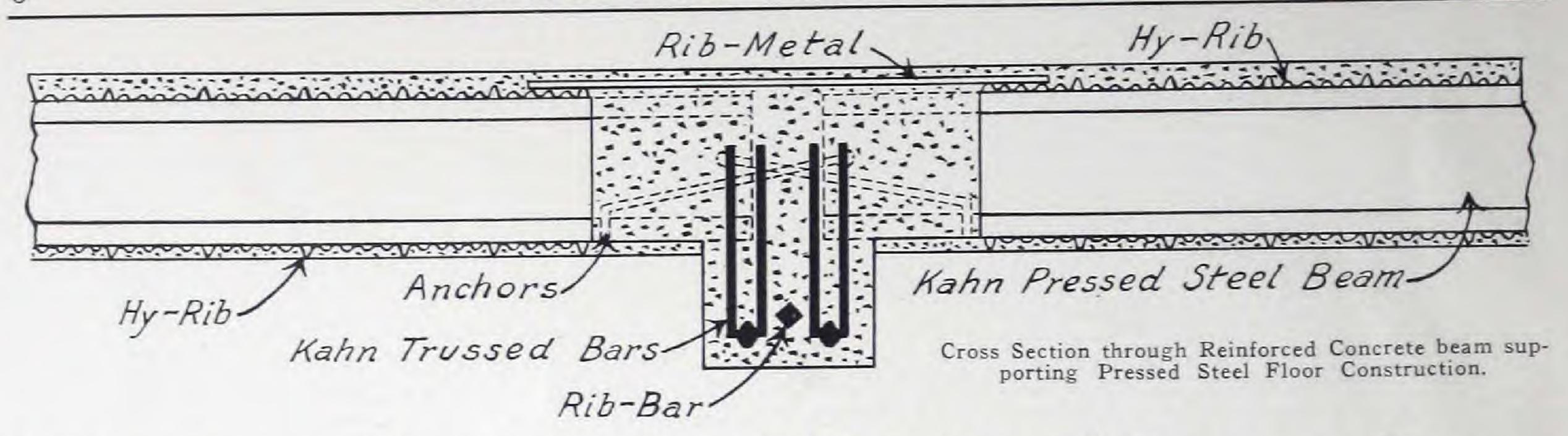
Soundproof Floor Construction

When the requirements demand an absolute sound proof construction for floors, this is readily accomplished by using an independent system of framing for the floor and ceiling. The Pressed Steel Beams for the floors support only the floor construction, and another set of beams of smaller section support only the ceiling, without any connection between the two sets of beams. There is a space of 2 inches between the



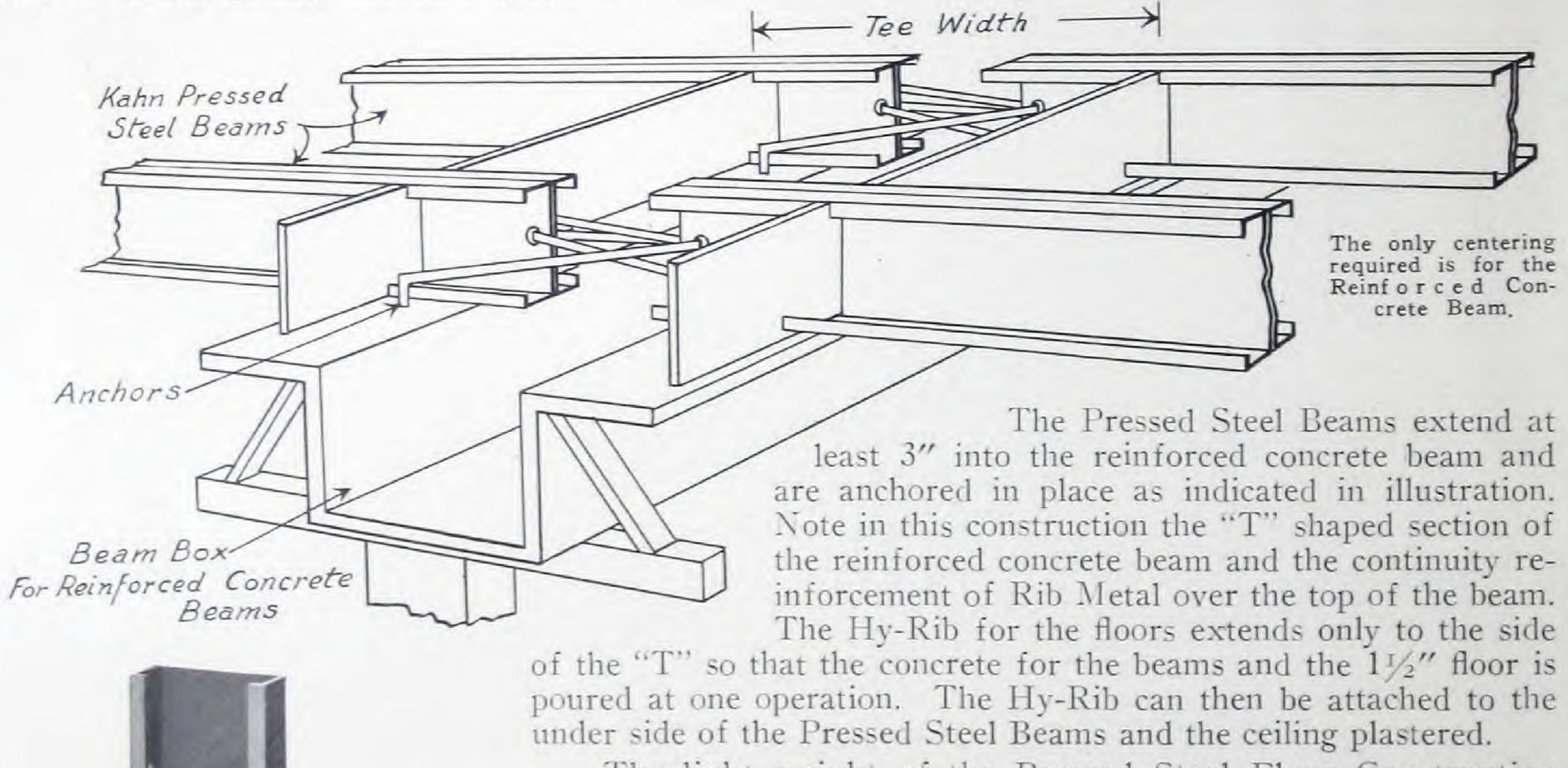
ceiling and the bottom of floor beams, so that the rooms are absolutely insulated from those above and below. This provides a sound proof floor construction which is only 2 inches thicker than the ordinary method of construction.

SOUNDPROOF FLOOR CONSTRUCTION.



Kahn Pressed Steel Joists with Reinforced Concrete Beams

The use of reinforced concrete beams and columns to support Pressed Steel floors provides a most economical construction. No forms whatever are required for the floors, the only centering being for the columns and beams as indicated in the illustration below. A reinforced concrete beam costs considerably less than a structural steel beam which is fireproofed by concrete, tile, or lath and cement plaster. The elimination of centering and the reduced amount of material to handle greatly increase speed of construction.

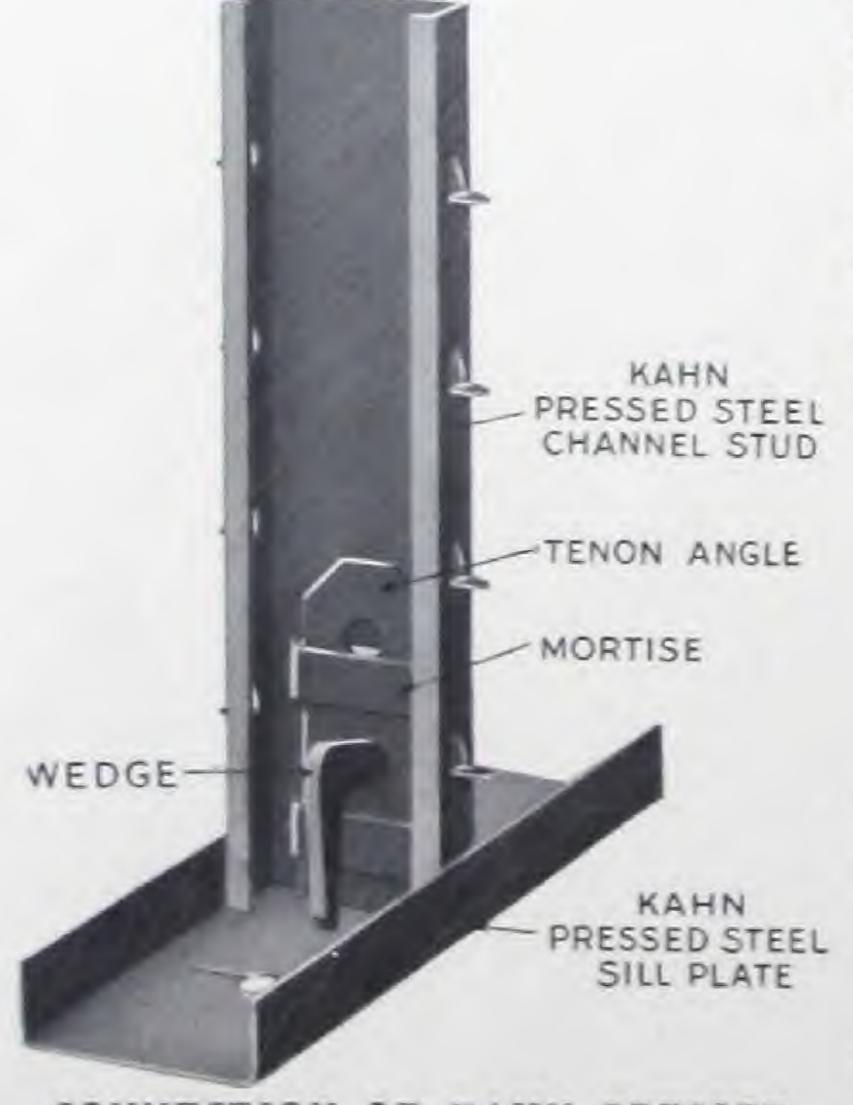


The light weight of the Pressed Steel Floor Construction saves material in the supporting beams, columns and foundations. 3/8" Hy-Rib Lath is used for the floor and ceiling. The tables on pages 10 and 11 give the carrying capacity of various sizes of Pressed Steel Beams.

Other Applications of Kahn Pressed Steel Construction

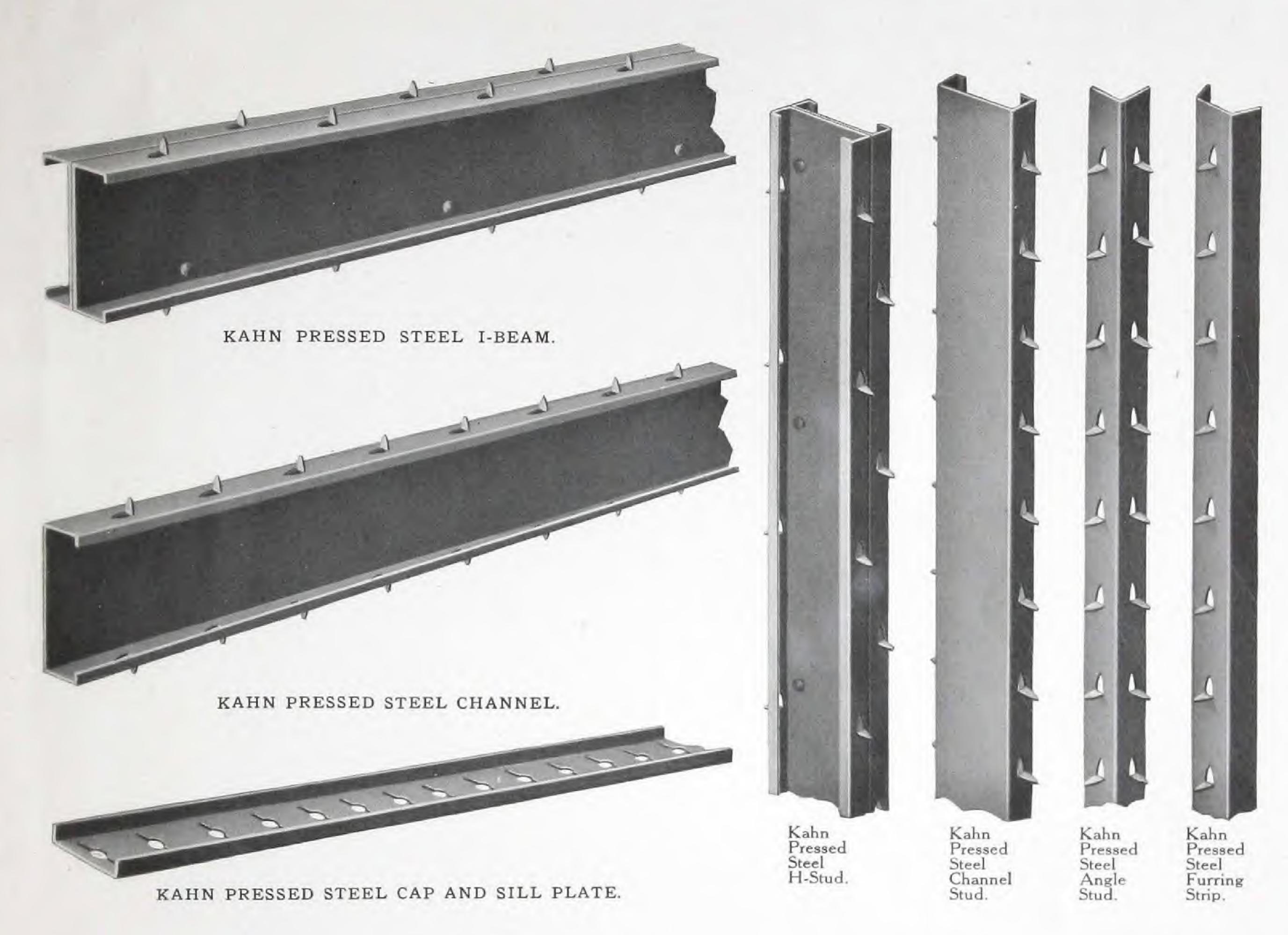
As indicated on next page, Kahn Pressed Steel Sections include all types and sizes of channels, studs, angles, furring strips, sill plates, beams, etc. The construction is extensively used in walls and partitions. The ¾" Hy-Rib Lath is readily attached to the Pressed Steel members by merely bending down the prongs. The improved standard connection between Pressed Steel Members eliminates all punching, bolting and riveting. The construction is also widely used in Multiple Houses for Industrial Companies, Mines, etc.

For further information write for our general pamphlet on Kahn Pressed Steel Construction.



STEEL CONSTRUCTION.

The tenon angle is passed through the sill plate from below and engages the mortise in the stud. The wedge is then driven in place by the blow of a hammer and holds the joint rigidly.



Sections of Kahn Pressed Steel Building Construction

Kahn Pressed Steel Sections are manufactured from the highest grade of steel under powerful presses, so as to insure their greatest strength and absolute accuracy. The large variety of shapes and sizes insures greatest economy in designs. In most instances there are two widths of flange for each depth of beam, in addition to various gauges of metal.

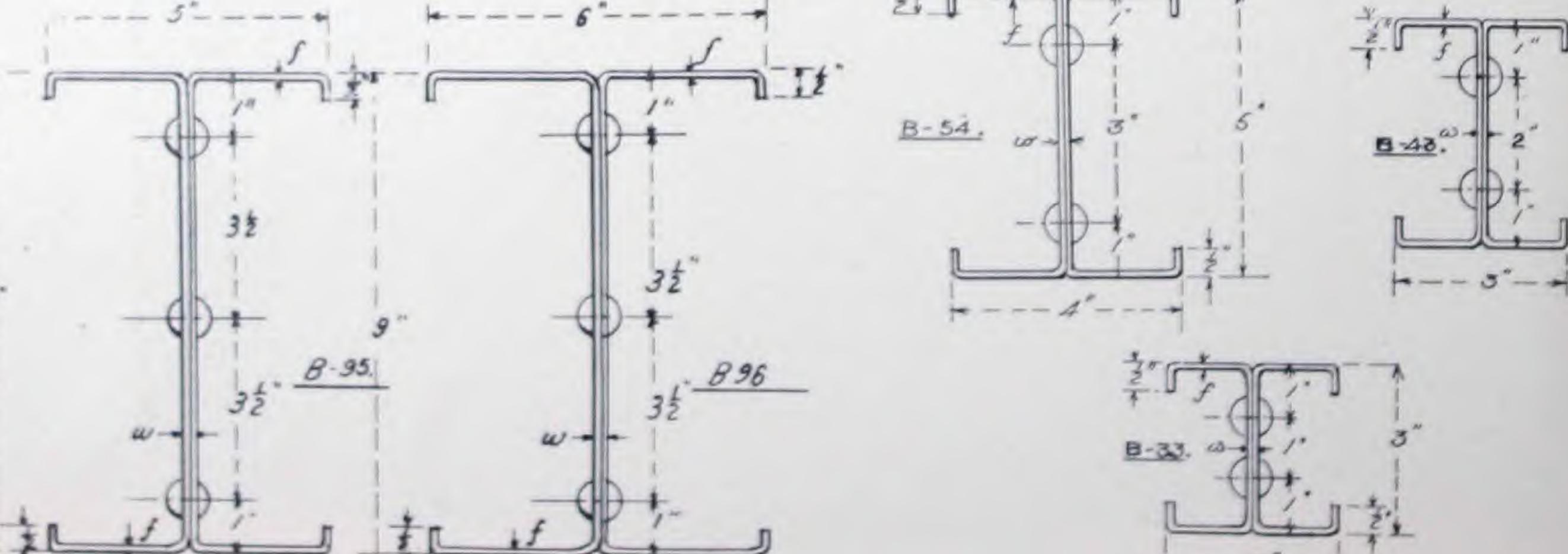
The beam sections are symmetrical in shape both horizontally and vertically, eliminating all danger of placing the beams with the wrong side up. The additional turned flanges greatly stiffen and strengthen these beams.

All members are cut to exact length and properly punched and fabricated for all connections. On the flanges of the sections, prongs are provided for attaching the Hy-Rib. Slots and holes are punched in jamb, sill and lintel members to permit nailing of rough bucks and wood trim.

All pressed steel material is painted with a special rust-resisting paint before shipment.



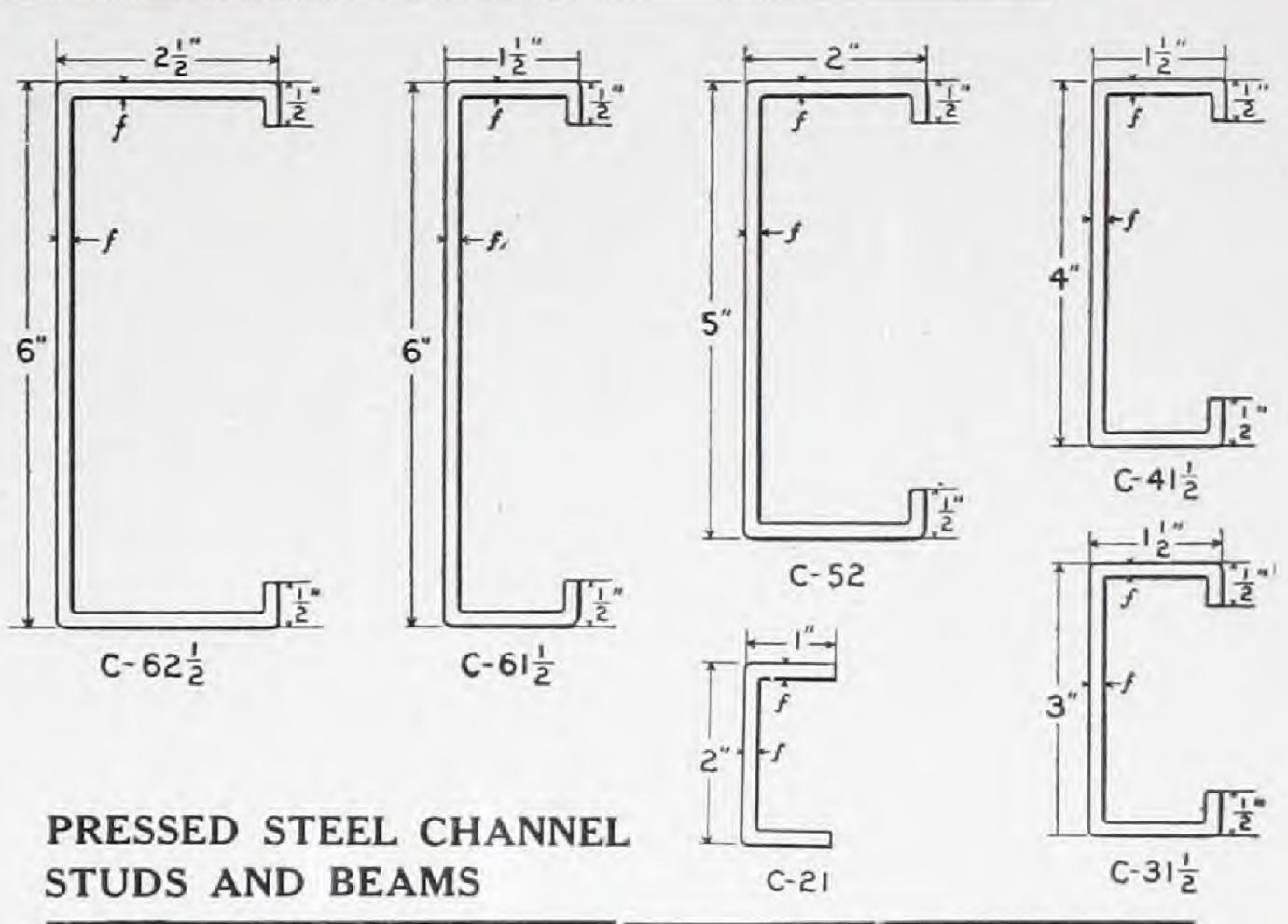
Steel Channels without prongs



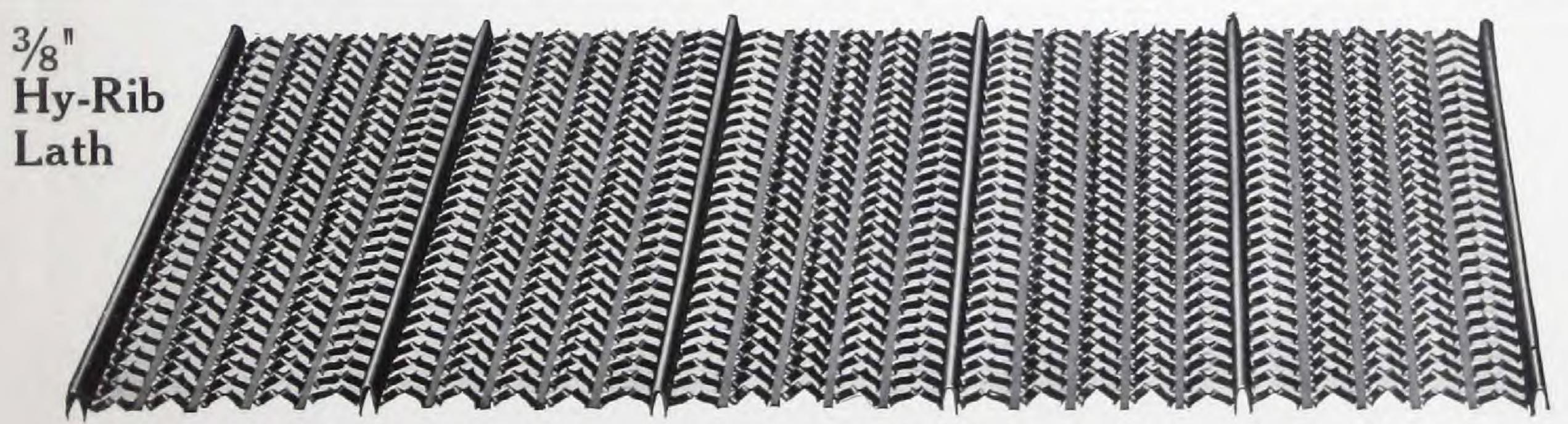
KAHN PRESSED STEEL I-BEAMS AND H-STUDS

PRESSED STEEL I-BEAMS AND H-STUDS

Section	n	Depth	Width	Weight	/	of Flange f)		ss of Web
Index		Beam	Flange	foot lbs.	Decimal	Fractional	Decimal	Fractional
B-127	14	12	7	10.4	.078125	5 6 4	.15625	37
B-125	14	12	5	9.3	.078125	5 6 4	.15625	37
B-106	14	10	6	8.8	.078125	84	.15625	37
B-105	14	10	5	8.3	.078125	€.	.15625	12
B-96	16 14	9	6	6.6 8.3	.0625 .078125	16 5 64	.1250 .15625	1/8 5 32
B-95	16 14	9	5	6.2 7.8	.0625 .078125	16 5 64	.1250 .15625	1/8
B-85	16 14	8	5	5.8 7.3	.0625 .078125	16 5 64	.1250 .15625	1/8 5 32
B-84	16 14	8	4	5.4 6.7	.0625 .078125	16 5 64	.1250 .15625	1/8 5 32
B-75	16 14	7	5	5.4 6.7	.0625 .078125	16 5 64	.1250 .15625	1/8 5 32
B-74	16 14	7	4	4.9 6.1	.0625 .078125	1 16 5 64	.1250	1/8 8 32
B-65	16 14	6	5	4.9 6.1	.0625 .078125	18 64	.1250 .15625	1/8 5 32
B-63	16 14	6	3	4.1 5.0	.0625 .078125	16 5 64	.1250 .15625	1/8 5 32
B-54	16 14	5	4	4.1 5.0	.0625	16 5 84	.1250 .15625	1/8 5 32
B-43	16 14		3	3.2 4.0	.0625 .078125	16 5 64	.1250 .15625	1/8 5 32
B-33	16 14		3	2.8	.0625 .078125	1 16 5 84	.1250	1/8 5 32



Section	Height	Width	Weight	Thickness of Flange and Web, inches					
Index	inches	Flange	lin. foot lbs.	Decimal	Frac- tional				
C-62½ 16 14	6	21/2	2.45 3.05	.0625 .078125	1 16 5 64				
C-61½ 16 14	6	11/2	2.05	.0625 .078125	1 6 5 6 4				
C-52 16 14	5	2	2.05 2.50	.0625 .078125	16 5 64				
C-41½ 16 14	4	1½	1.60	.0625	1 16 5 64				
C-31½ 16 14	3	11/2	1.40 1.75	.0625	16 5 64				
C-21 16 14	2	1	0.80	.0625	16				



Hy-Rib with Kahn Pressed Steel Construction

Hy-Rib is a steel sheathing, stiffened by rigid, deep ribs, formed from the same sheet of steel. These ribs give great stiffness to the material so as to eliminate the use of wood forms in floors and roofs, and stiffening members in partitions, walls, and ceilings.

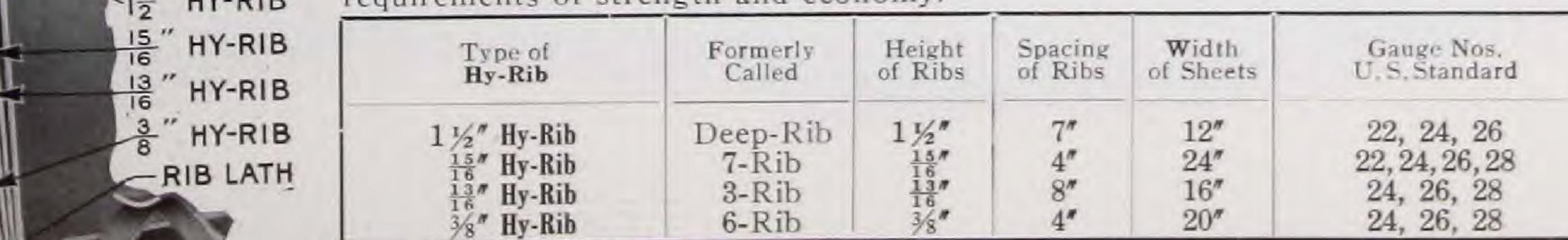
3/8" Hy-Rib Lath is ordinarily used in connection with Kahn Pressed Steel Construction, as it

3/8" Hy-Rib	* Clear distance between studs for walls and patitions	* Clear distance between supports for ceilings
24 gauge	36"	33" -
26 gauge	32"	30"
28 gauge	24"	22"

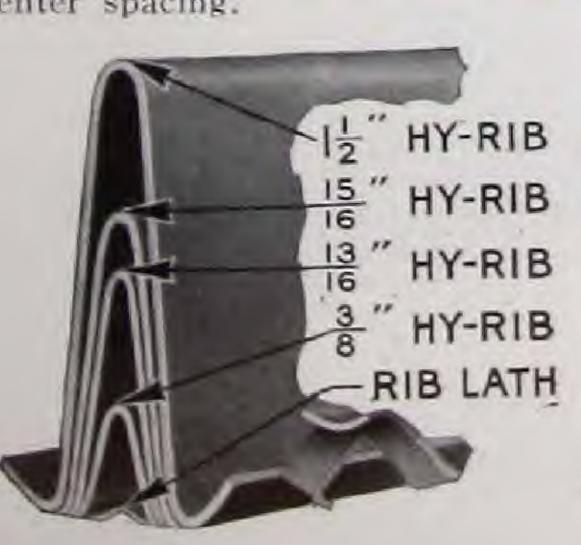
* Add width of flange of section to obtain center to center spacing.

supplies sufficient stiffness to span the standard spacings of joists. The accompanying table indicates spans for various gauges of 3/8" Hy-Rib Lath, but ordinarily 24 gauge is used for floors and 28 gauge for ceilings, for joist spacings up to 23½ inches. The Hy-Rib is readily attached to the pressed steel shapes by simply bending down the prongs provided in the steel members.

Hy-Rib is also furnished in greater depths, which provide greater stiffness and permit wider spacing of supports. In this way Hy-Rib exactly meets all requirements of strength and economy.



Standard lengths, 6, 8, 10 and 12 feet. Other lengths cut without charge except for waste.



Safe Loads Uniformly Distributed for Kahn Pressed Steel I-Beams in Pounds

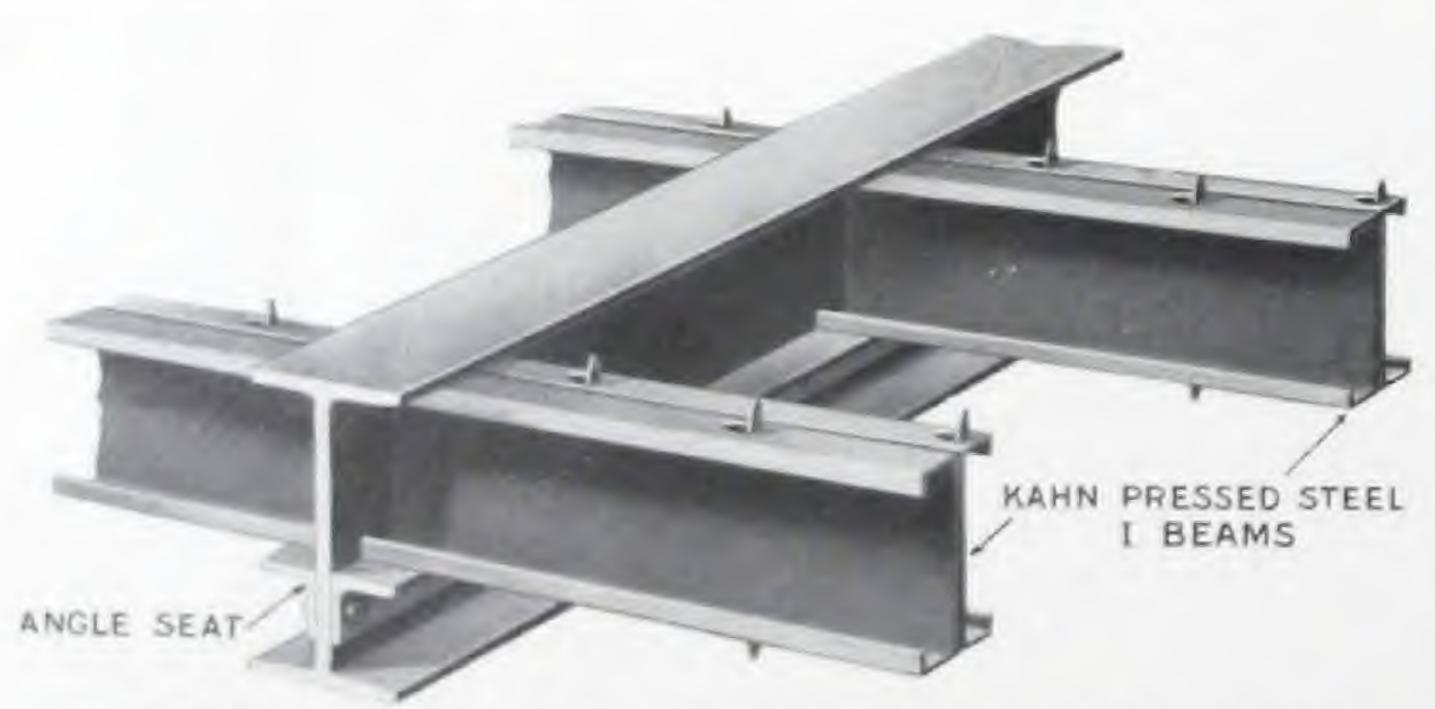
Fiber Stress = 14500 lbs. per sq. in.

Safe loads include weight of construction-For safe live loads deduct weight of construction.

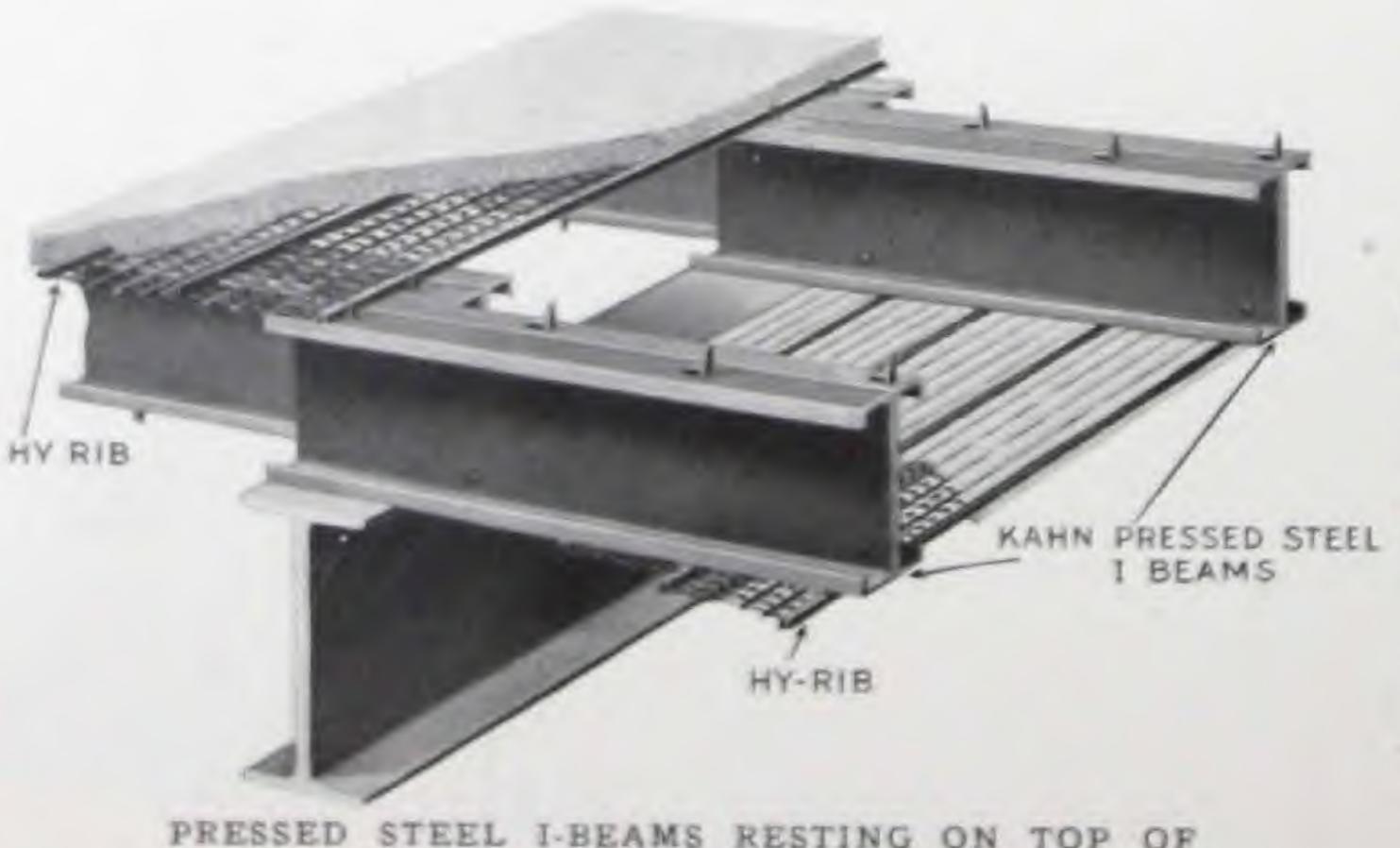
200	Index	50	ght S.									S	PAN	IN F	EET																
Inches	Index No.	Gauge	Weigh Lbs.	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
3	B-33	16 14	2.8	1805 2265	1445 1812	100000000000000000000000000000000000000	1030 1295	1000	100000	722 960								1	Note-	-Load	s to r	ight o	of hea	vy lin	es wi	l caus	se a d	eflecti	on gr	cater	
4	B-43	16 14	3.2	2610 3285		1740 2190	The Property of	100000	1100000000	2007/2014		870 1095						1	than — of span, or maximum deflection for plastered ceilings. 360 M. B. = Maximum Bending Moment.												
5	B-54	16 14	4.1 5.0	4280 5340	3425 4275	2850 3560	2440 3055	10000000				1425 1780			The State of the Control of the Cont									W =	Total	load i	n pou		Mon	ient.	
6	B-63	16 14	4.1 5.0	4530 5665	3625 4530	3020 3775	2590 3235	100000000000000000000000000000000000000	2520	2265	2060	1885	1745	1620	1510	1415	1330	1260							pan h		WL				
	B-65	16 14	4.9 6.1	6345 7930	10.00		3620 4530	3960	3525	3170	2880		2440	2265	2115	1980	1865	1760		roa val				M D	/in	Har A -	12	WL			
7	B-74		6.1	6695 8370	6700	5580	3825 4775	3345 4180	3720	3350	3040	2790	2570	2390	2230	2090	1970	1860	1765	1675	1595				м. в.	(in. 1)	is.)	8			
	B-75	16 14	5.4 6.7	7750 9690	199255	6470	4430 5540	4845		3875	3525	3230	2980	2770	2580	2425	2280	2150	2040	1940	1845		Lanna		1	35 L					
8	B-84	16 14	5.4 6.7	8050 10070	8055	6715	4600 5750	5035	4475	4025	3660	3360	3100	2880	2685	2500	2370	2240	2120	2015	1920	1830	1750	1680							
	B-85	16	5.8	9265 11580	9260	7720		5790	5150	4630	4210	3860	3560	3310	3085	2895	2725	2575	2440	2315	2200	2105	2015	1930		1					
9 .	B-95	16 14	6.2 7.8	13590	8700 10870	9060	-	6790	6040	5435	4940	4525	4180	3880	3625	3395	3200	3020	2860		2590	2470	2365	2265	2175						
	B-96	16	8.3		12240		8740	7650	6790	6110	5560	5100	4710	4370	4080	3830	3600	3400	3220	3060	2915	2780	2660	2550	2495	200	22211				
10	B-105 B-106	14		17620	14100	11750	8980 10060	8810	7830	7045	6410	5880	5420	5035	4700	4405	4150	3920	3710	3150 3525	3360	3205	3065	2940	2820	2715	2615		0015	020	
2	B-125 B-127		9.3	20390 24920	16320 19940	13590 16620	11640	10190 12460												4075 4985											
				4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

Safe loads for Pressed Steel Channel Beams are one-half of the above.

The tables given for carrying capacities are based on the ACTUAL NET SECTIONS of the steel after having deducted the area for punching out of the prongs. Standard rivets are used for riveting together the channel sections that form the I-Beams.



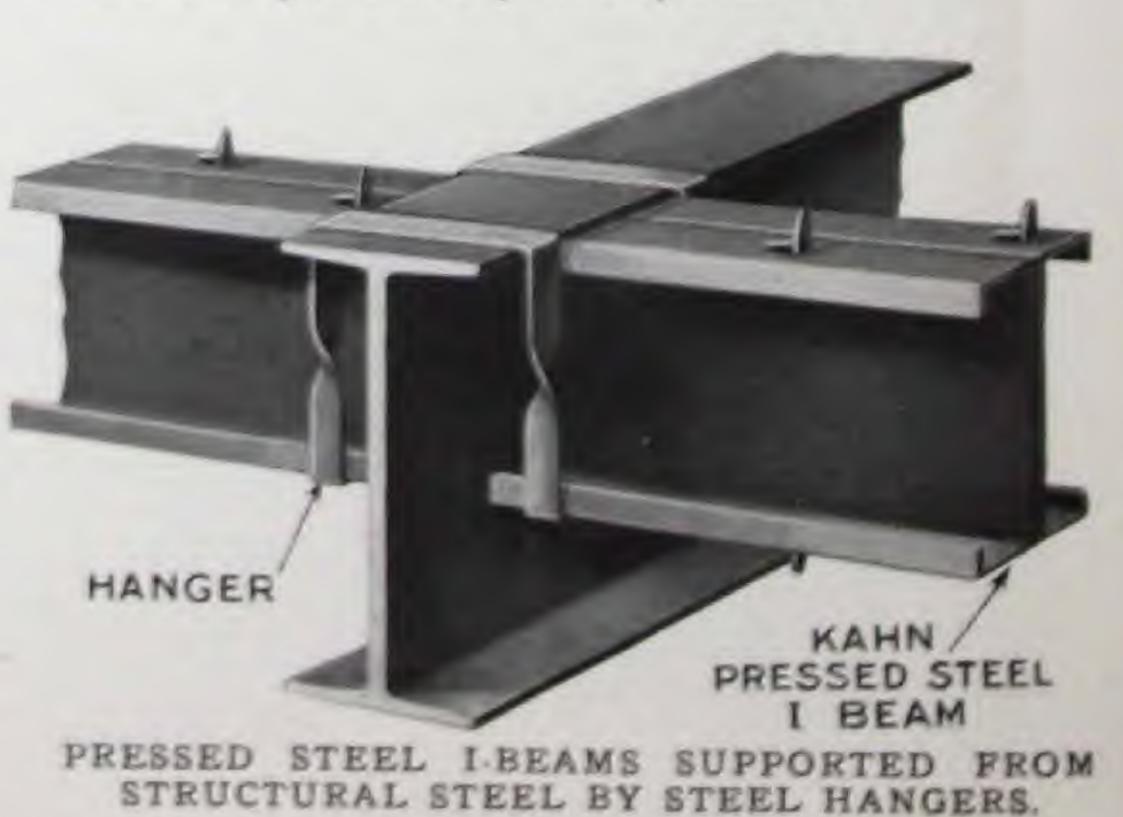
SUPPORTING PRESSED STEEL I-BEAM ON ANGLE RIVETED TO STRUCTURAL STEEL.

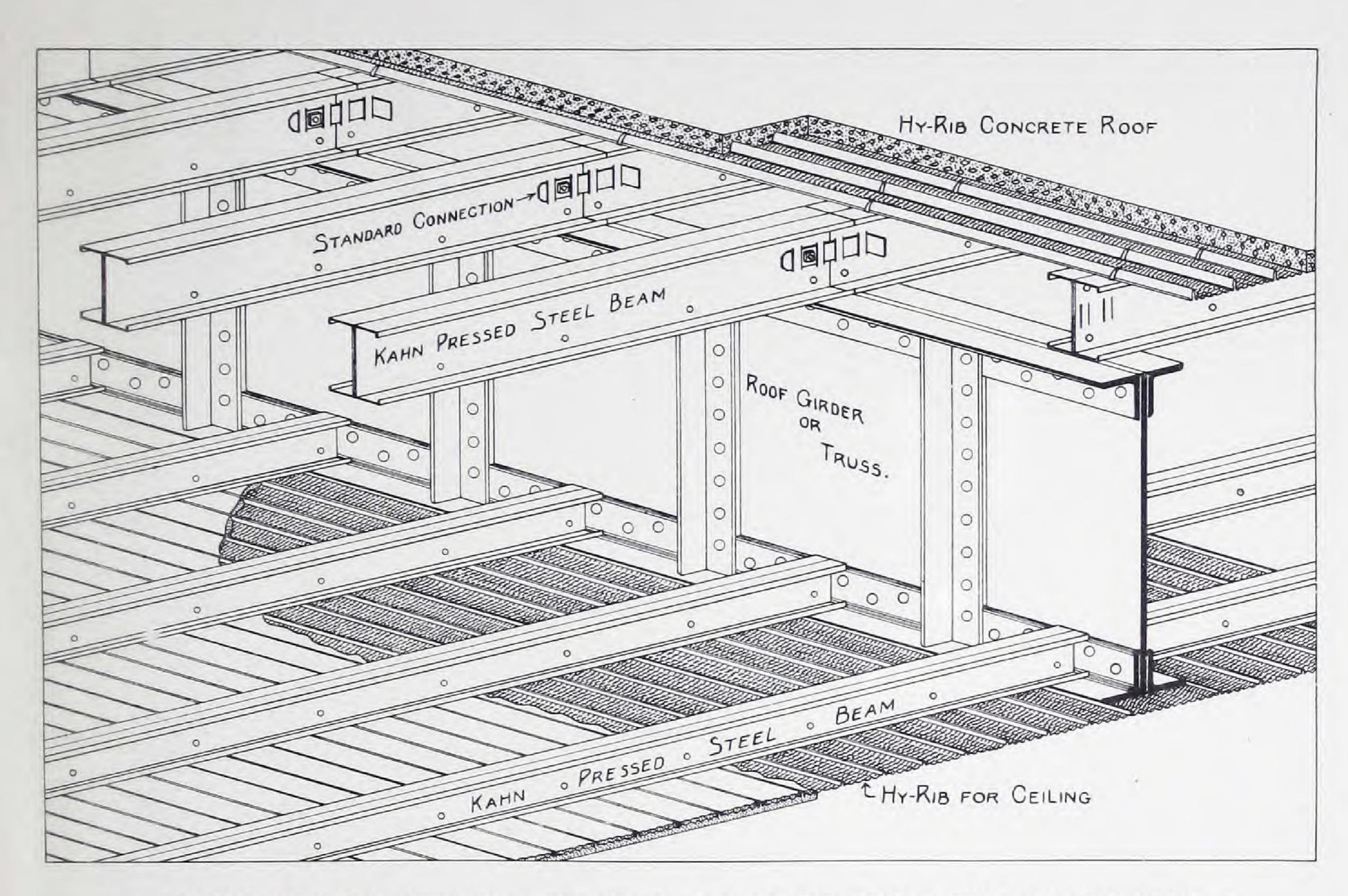


PRESSED STEEL I-BEAMS RESTING ON TOP OF STRUCTURAL STEEL BEAMS.

Supporting Kahn Pressed Steel Beams from Structural Steel

The photograph shows three methods by which Pressed Steel I-Beams can be supported from structural steel beams: First, by means of an angle riveted to the structural steel beams; Second, by resting the Pressed Steel Beam on top of the structural beams; and, Third, by means of a steel hanger over the top of beams. The first method is excellent but rather expensive; the second is simple and satisfactory where the projection of the steel beam below the floor slab is not objectionable, and the third is satisfactory and comparatively inexpensive.





A CEILING OF KAHN PRESSED STEEL BEAMS AND HY-RIB UNDER ROOF CONSTRUCTION.

Safe Loads per lineal foot for Kahn Pressed Beams without deflecting more than 1/360 of the span, the maximum deflection for plastered ceilings.

Height	Index	agn	SPAN IN FEET - 1 0 1 10 1 10 10 20 21 2															
Toc	No.	Ga	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
3	B- 33	16 14	134 171	80 101	64 81	46 59	35 44	29 34	21 27	17 21	14 17	11 14	9 12	10	9			
4	B- 43	16 14	213 268	163 205	122 147	89 108	67 81	50 62	41 49	33 39	26 32	22 26	18 22	15 18	13 16	13	12	10
5	B- 54	16 14	350 436	268 334	211 264	171 214	138 173	105 132	83 104	66 84	54 68	45 56	37 47	31 39	27 34	23 29	20 25	17 22
	B- 63	16 14	370 462	283 354	224 280	181 227	149 187	126 157	106 130	85 100	69 88	57 73	48 61	40 51	34 44	29 37	25 32	22 28
8	B- 65	16 14	517 650	396 495	313 392	254 317	209 262	176 220	150 187	123 151	100 123	82 100	.68 84	52 71	49 61	42 52	36 45	31
	B- 74	16 14	546 682	418 523	331 413	268 335	221 276	186 233	158 197	137 171	119 149	100 123	83 103	70 87	56 74	51 63	44 55	38 49
7	B- 75	16 14	633 791	484 605	371 478	310 388	256 320	215 269	183 229	188 198	137 172	115 144	96 120	81 102	69 87	59 74	54 63	44 55
	B- 84	16 14	657 820	502 629	397 497	322 403	265 333	224 280	190 238	164 206	143 179	125 156	111 139	97 122	83 104	71 89	61 77	53 66
8	B- 85	16 14	754 945	579 723	457 572	370 463	305 383	257 322	218 274	188 236	165 206	144 181	128 160	111 141	94 121	81 104	70 89	60 77
	B- 95	16 14	887 1108	680 848	537 671	435 544	359 449	303 377	257 321	222 277	193 242	170 212	151 188	134 168	120 150	104 130	89 120	77 104
9	B- 96	18	998 1250	765 956	604 754	489 611	404 505	340 425	290 362	249 312	218 272	191 239	169 212	151 189	135 169	123 153	102 135	108
	B-105		1283	982	777	629	520	437	372	321	280	246	218	194	174	158	142	130
10	B-106	14	1437	1101	870	705	582	490	417	359	313	275	244	218	195	176	160	144
20	B-125	14	1663	1274	1007	816	673	566	482	416	361	318	282	252	225	204	185	169
12	B-127	14	2037	1557	1231	997	823	693	590	508	443	389	345	308	276	249	226	20

Deflection = $\frac{Wl^3}{76.8 EI}$

For Channels which go to make up above Beams loads are one-half that given in these tables.

Loads ABOVE heavy lines are calculated by formula for stiffness; those BELOW by formula for strength.

